

Weather and Climate Unit

Name: _____

Due: _____

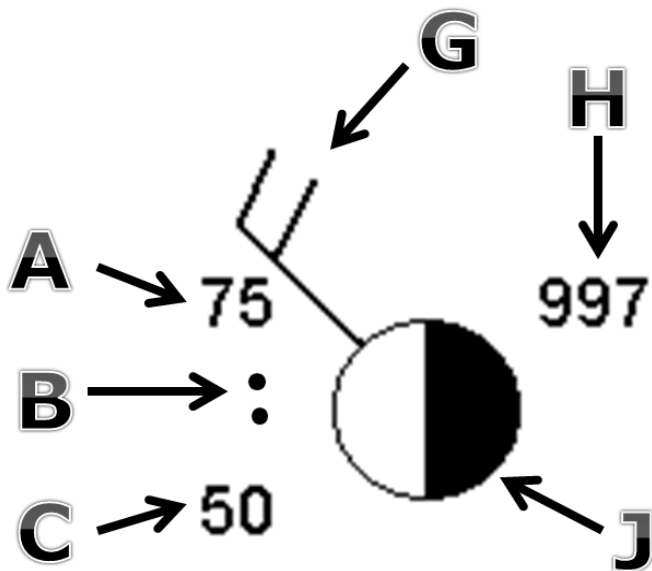
Please provide at least a 25 word weather forecast for today? You must include some variables from page 2 in your forecast?

Date: _____

Describe the general climate of 4 U.S. States in the month of January?



Please look at the weather station symbols and variables on the next page to accurately describe A, B, C, G, H, J from below.



A _____

B _____

C _____

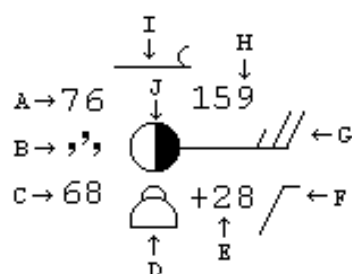
G _____

H _____

J _____

Cloud Coverage No Clouds 1/10 1/4 1/2 3/4 9/10 Completely Overcast Sky Obscured	Wind Speed Calm < 5 knots 5 knots 10 knots 20 knots 25 knots 50 knots	Cloud Types <u>High Elevation</u> Scattered Cirrus Dense Cirrus Cirrostratus Heavy Cirrostratus Cirrus & Cirrostratus <u>Middle Elevation</u> Thin Altostratus Thick Altostratus Thin Altocumulus Heavy Altocumulus <u>Low Elevation</u> Stratocumulus Fair Weather Cumulus Developing Cumulus Cumulonimbus Cirrocumulus Nimbostratus Stratus Fractostratus	Weather Conditions <table border="1"> <thead> <tr> <th></th> <th colspan="3">INTERMITTENT</th> </tr> <tr> <th></th> <th>Light</th> <th>Moderate</th> <th>Heavy</th> </tr> </thead> <tbody> <tr> <td>Rain</td> <td>•</td> <td>••</td> <td>•••</td> </tr> <tr> <td>Snow</td> <td>*</td> <td>*•</td> <td>*••</td> </tr> <tr> <td>Drizzle</td> <td>,</td> <td>;</td> <td>;</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th> <th colspan="3">STEADY</th> </tr> <tr> <th></th> <th>Light</th> <th>Moderate</th> <th>Heavy</th> </tr> </thead> <tbody> <tr> <td>Rain</td> <td>••</td> <td>•••</td> <td>••••</td> </tr> <tr> <td>Snow</td> <td>*•</td> <td>*••</td> <td>*•••</td> </tr> <tr> <td>Drizzle</td> <td>,"</td> <td>,"</td> <td>,"</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th> <th colspan="3">THUNDERSTORMS</th> </tr> <tr> <th></th> <th>Mild</th> <th>Moderate</th> <th>Severe</th> </tr> </thead> <tbody> <tr> <td>Rain</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Snow</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Hail</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <div> Hail Snow Grains Tornado Ice Crystals Drifting Snow </div> <div> Freezing Drizzle Light Heavy Freezing Rain Light Heavy </div>		INTERMITTENT				Light	Moderate	Heavy	Rain	•	••	•••	Snow	*	*•	*••	Drizzle	,	;	;		STEADY				Light	Moderate	Heavy	Rain	••	•••	••••	Snow	*•	*••	*•••	Drizzle	,"	,"	,"		THUNDERSTORMS				Mild	Moderate	Severe	Rain				Snow				Hail			
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Wind Direction Wind comes FROM the direction of the arrow.	Fronts Warm Cold Stationary Occluded Warm (Aloft) Cold (Aloft)	SHOWERS Slight Rain Violent Rain Slight Snow Moderate/Heavy Rain Sleet/Hail Moderate/Heavy Snow	MISC. SKY COVER Haze Smoke Dust/Sand Fog in Patches Light Fog Heavy Fog																																																												
Barometric Tendency Increase in Air Pressure over Last 3 Hours Rising, then Falling Rising, then Steady Rising Steadily Falling, then Rising Steady Falling, then Rising Falling, then Steady Falling Steadily Rising, then Falling		Decrease in Air Pressure over last 3 Hours Rising, then Falling Rising, then Steady Rising Steadily Falling, then Rising Steady Falling, then Rising Falling, then Steady Falling Steadily Rising, then Falling																																																													

Weather Station Model Demo



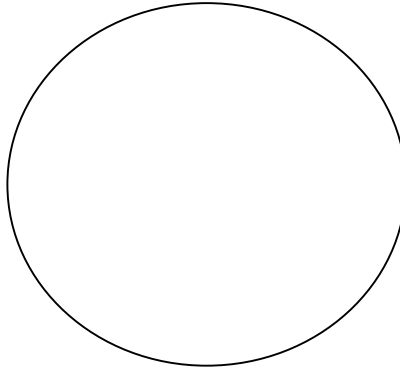
A - Temperature
 B - Present Weather
 C - Dew Point
 D - Low Cloud Type
 E - Pressure Change

F - Pressure Tendency
 G - Wind Speed & Direction
 H - Barometric Pressure
 I - High Cloud Type
 J - Cloud Coverage

If the following circle represents earth, please draw the thickness of the atmosphere. Also create a pie graph showing what chemical elements the atmosphere is of. Answer questions on side.

Importance of an atmosphere

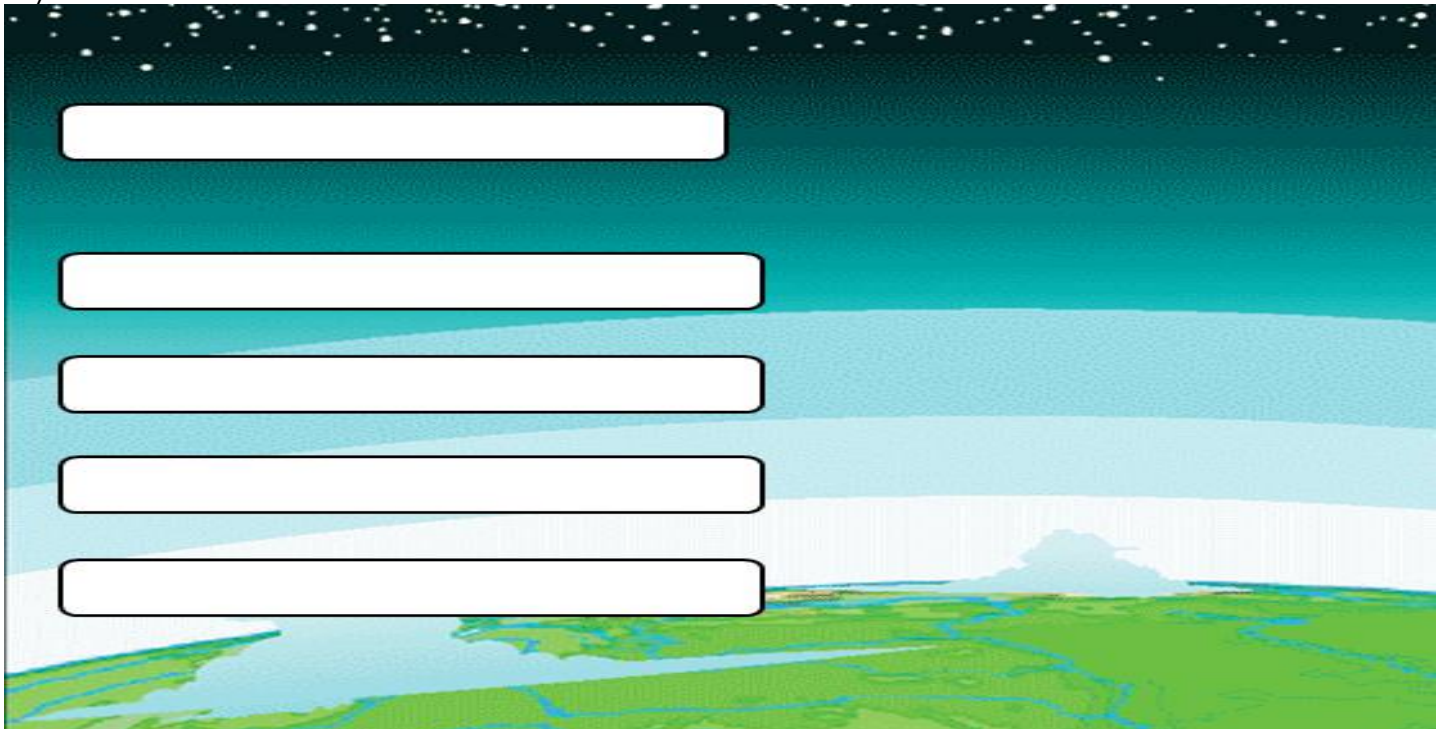
-
-
-



Does the moon have an atmosphere? What's different there?

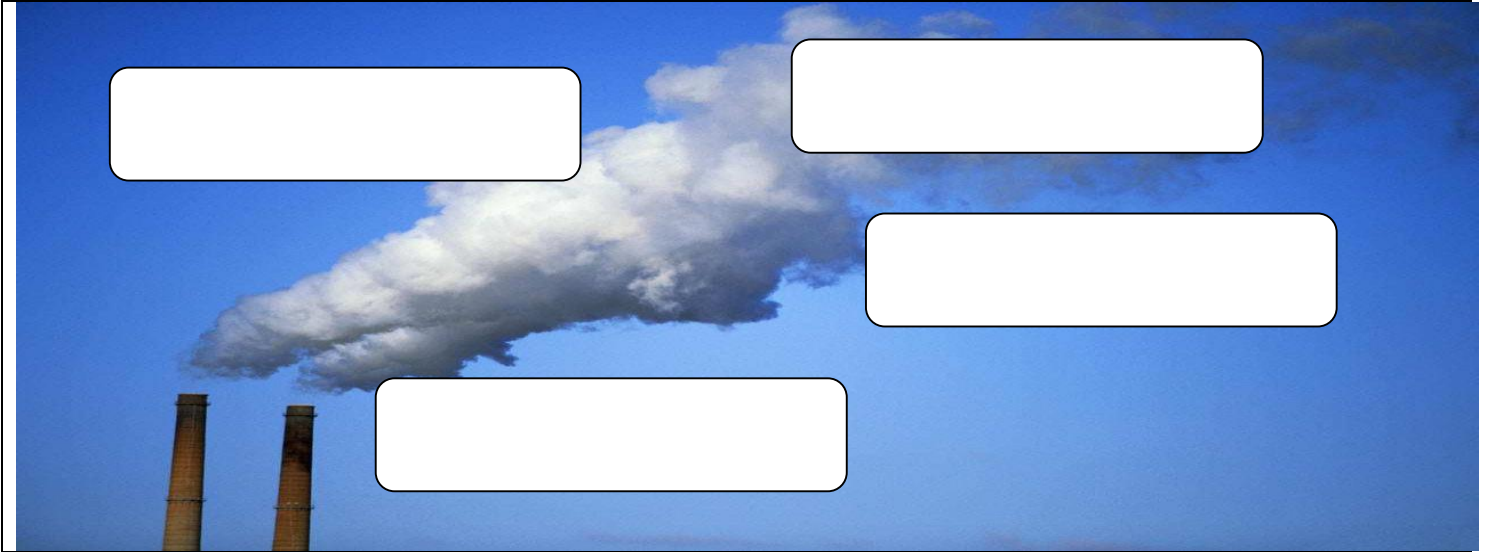
Why is the sky blue?

Name the layers of the atmosphere and draw some "things" that you might find in each layer.

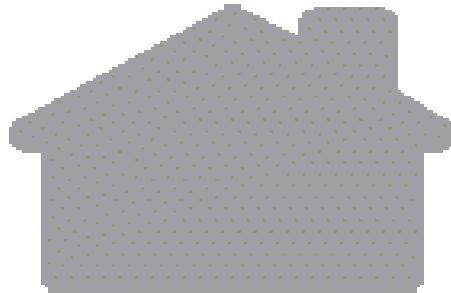


How does temperature change?

Please record some types of air pollution around the picture below

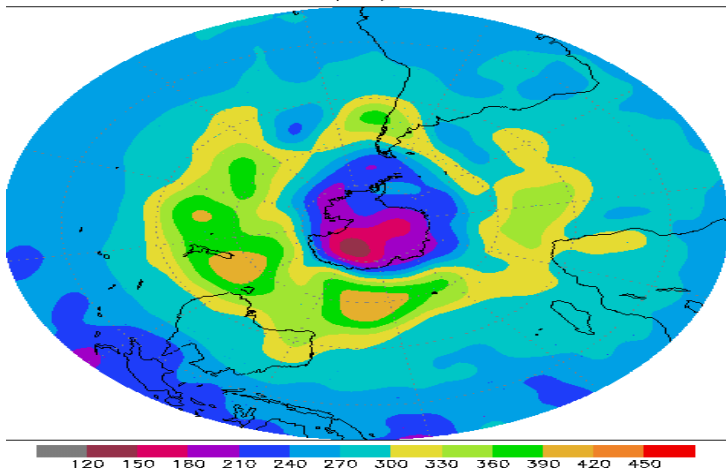


What is so dangerous about carbon monoxide? What are some precautions you should take to avoid this type of poisoning?

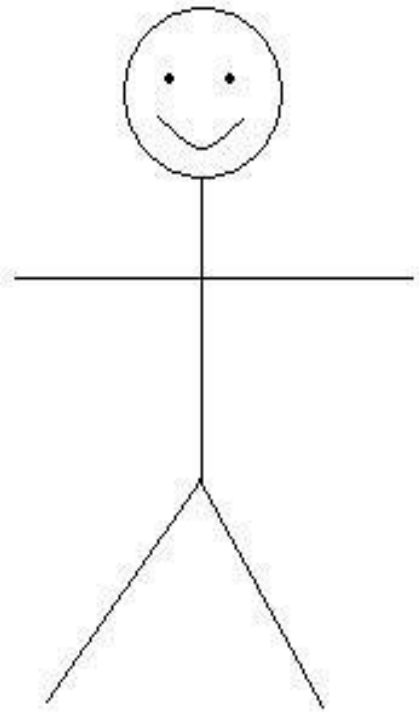


Please analyze the photo below. Do you recognize the environmental issue? What do you know about it? Hint, It's a big hole.

TOVS Total Ozone Analysis (Dobson Units)
Climate Prediction Center/NCEP/NWS/NOAA
09/07/03



Please decorate this stick figure with accessories, and describe in the margin ways to protect yourself from Ultraviolet Radiation known as UV ray's which can cause skin cancer.



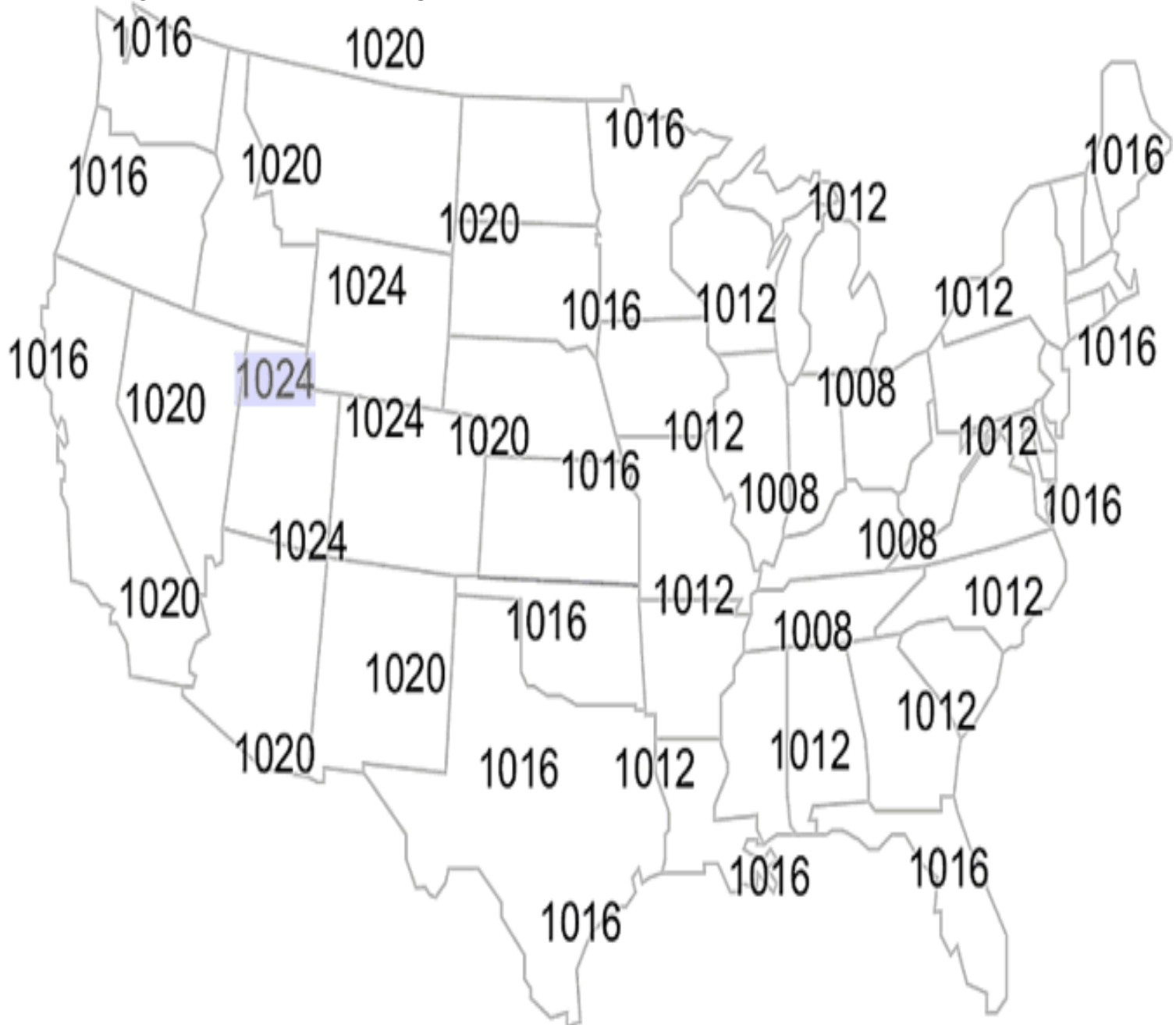
Please provide information about how each picture below is connected to air pressure

	<p>Air Pressure Acts...</p> <p>_____ in all directions.</p>	<p>As _____ increases, _____ decreases, As _____ decreases, _____ increases. The two are inversely proportional.</p>
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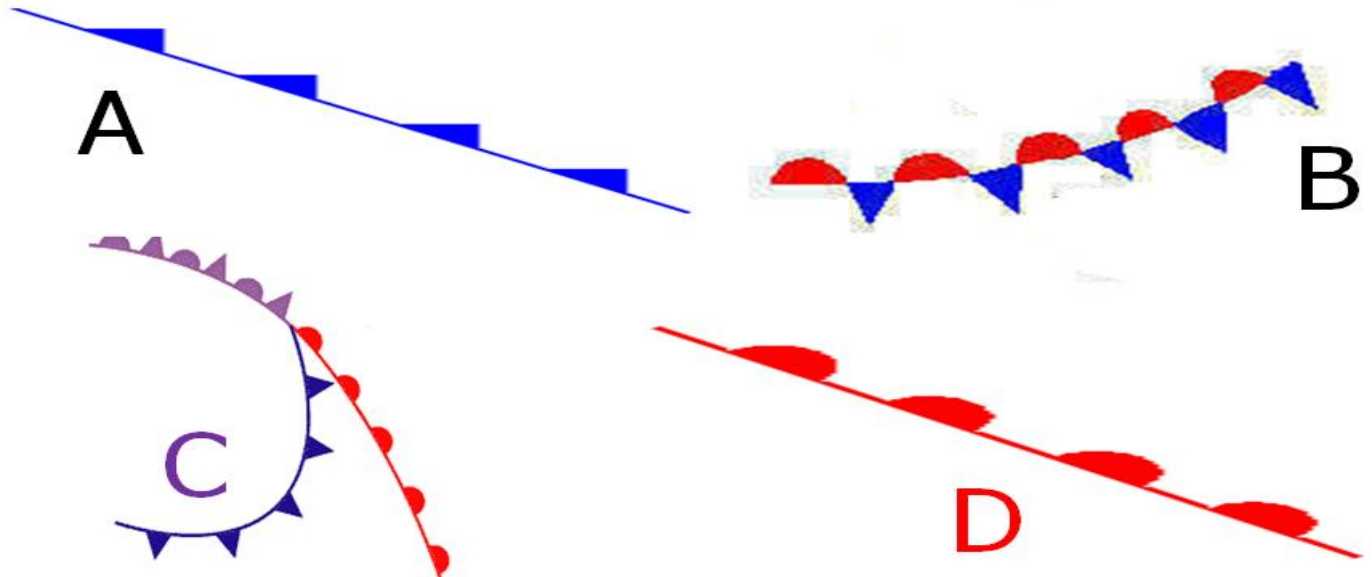
Describe one experiment that could show air pressure in the box below. Provide a procedure and an explanation as to how this experiment shows air pressure.

Visual of experiment and procedure	Explanation of experiment

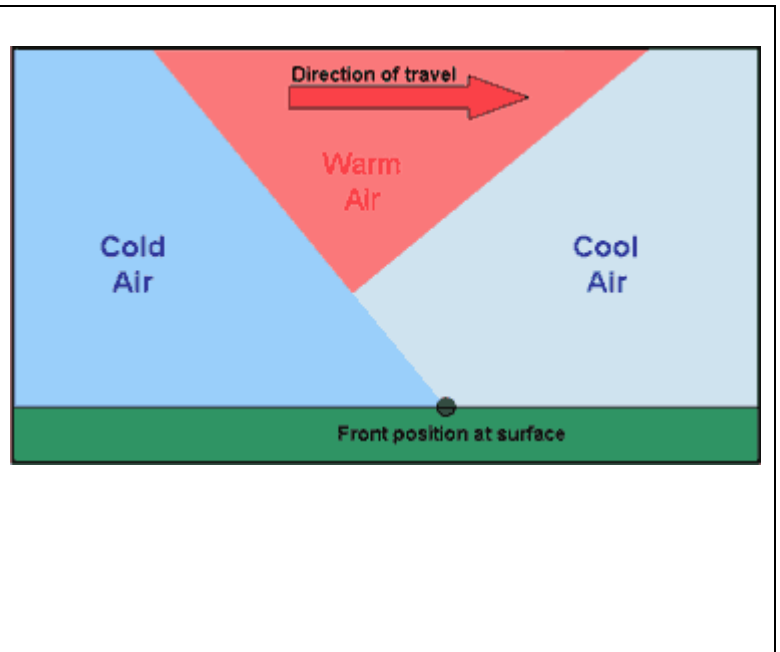
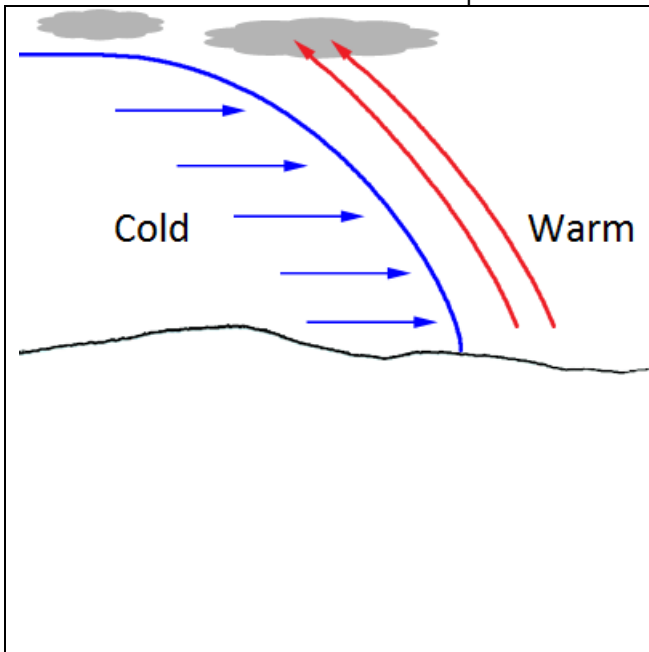
Please use the atmospheric Pressure data to create an accurate Isobar of the US. Make a large H with an area of **High Pressure** and **L** for an area of **Low Pressure**.



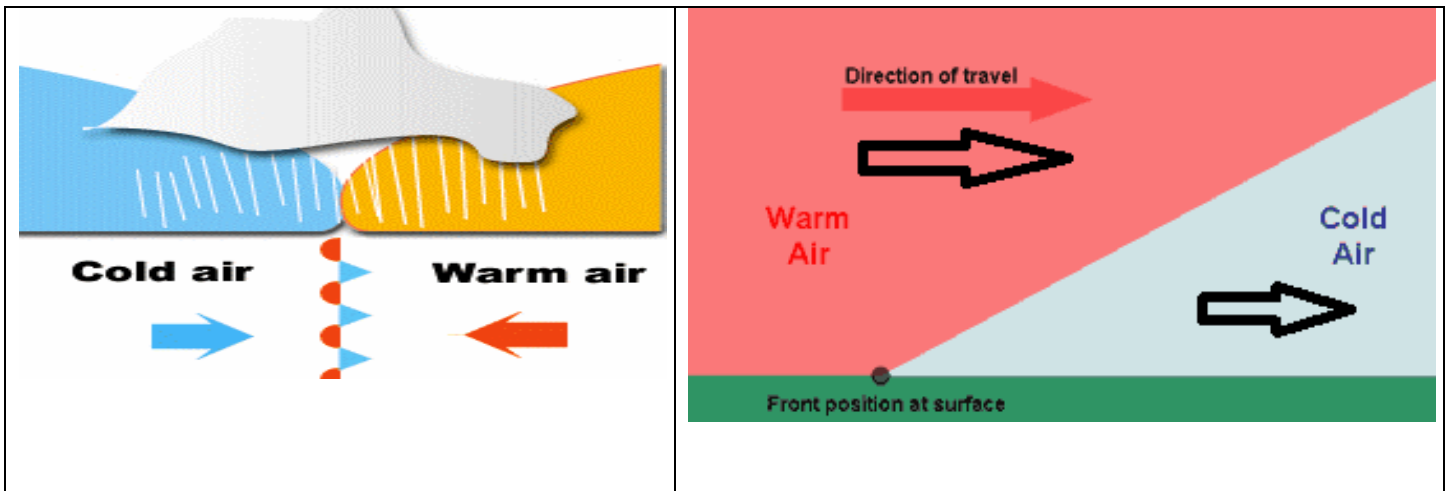
Please name the four types of fronts we have studied based on their weather symbols.



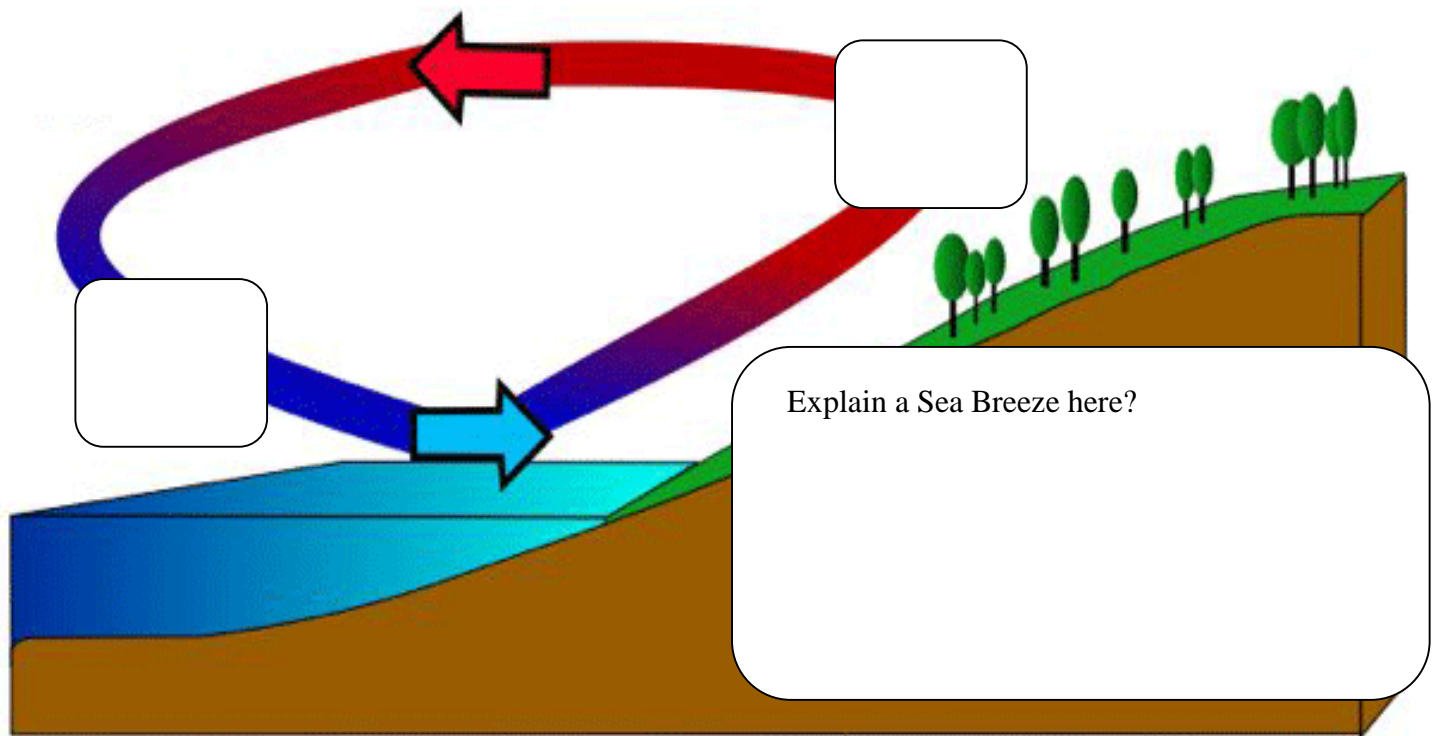
Name the front based on the picture.



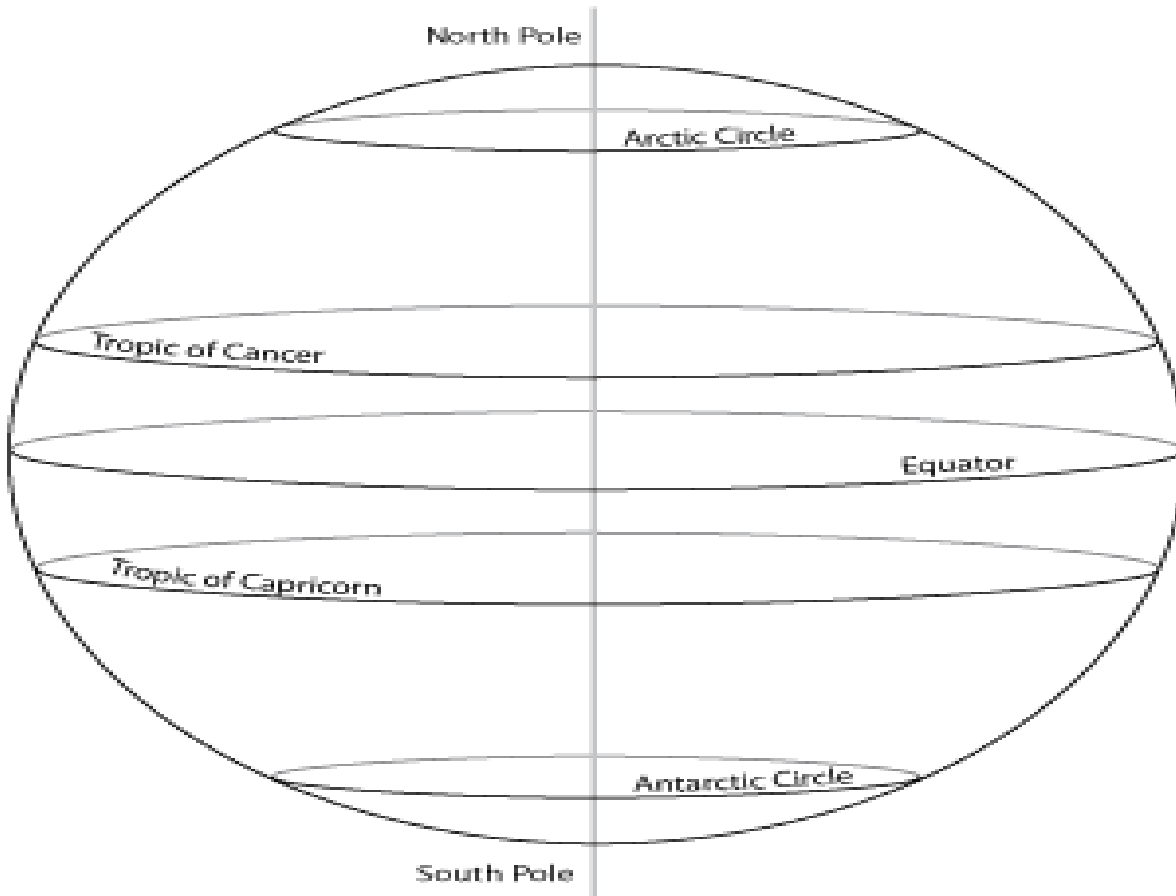
Name the front based on the picture.



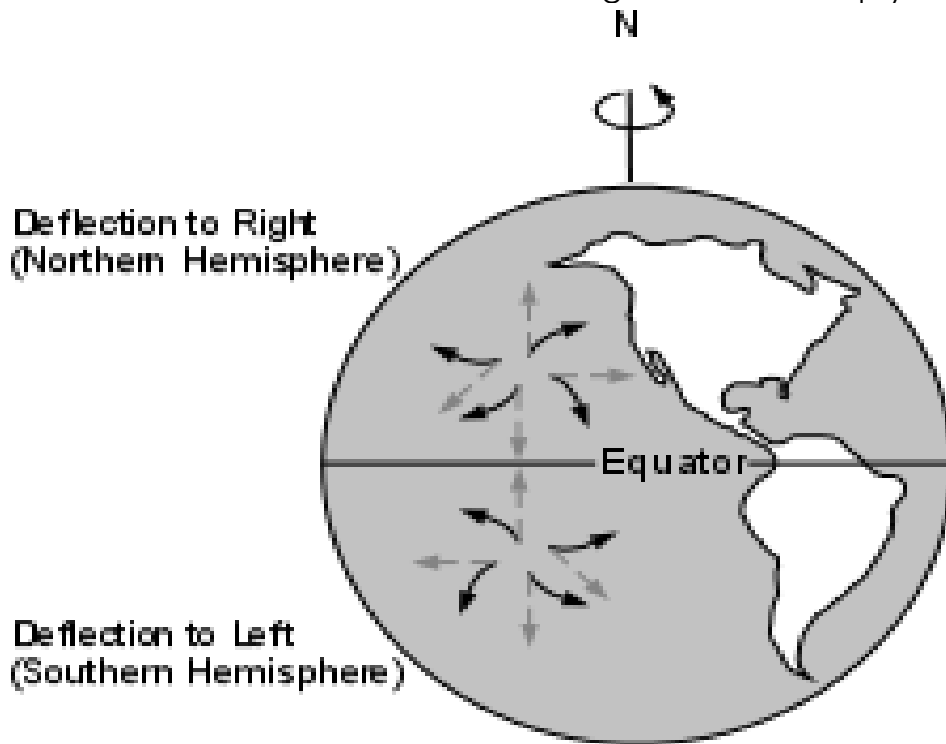
Describe how temperature and air pressure are related using the diagram of a sea breeze. Make sure to include a Big L for Low Pressure and big H for High Pressure



Please use the picture of the earth below to describe high and low pressure patterns.

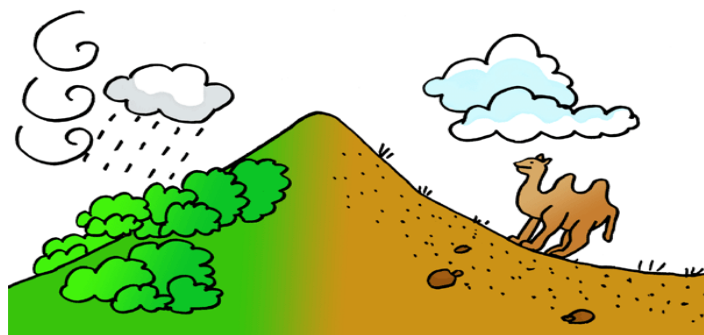


What is the Coriolis Force? Use the images below to help you.

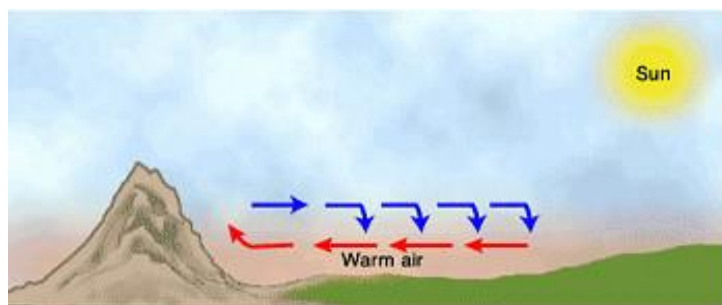


What is wind in more than 15 words? _____

Describe the two pictures below. What are they and what is happening? We are still on wind.

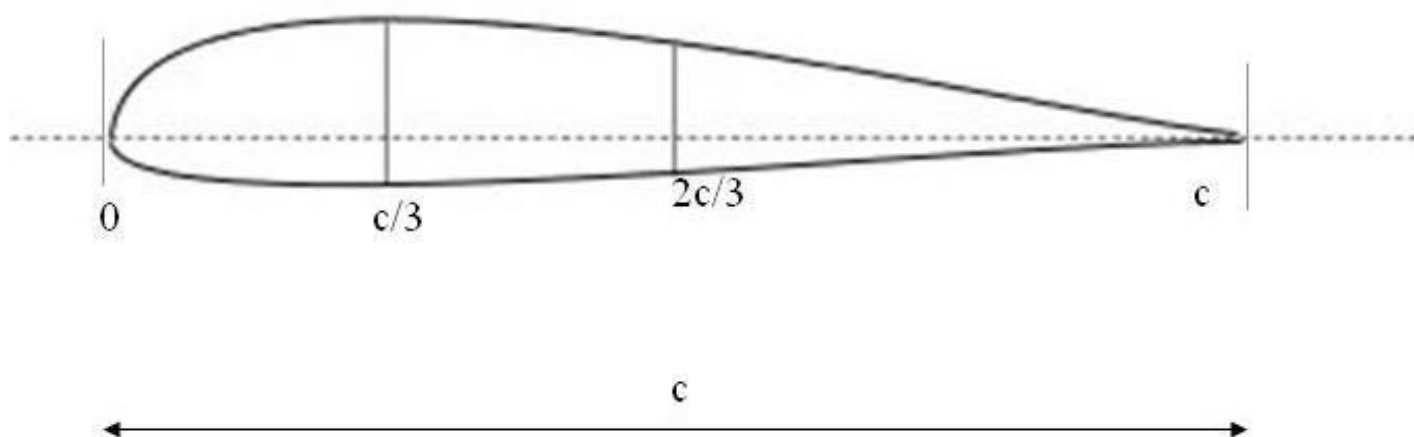


Mountain Rain Shadow Effect



Valley Wind

Use the wing below with your knowledge of Bernoulli's Principle to describe how flight is possible.



Describe two severe weather patterns. Please include air pressure in both responses. A strong answer will include how the severe weather forms, dangers / destructive forces, and safety concerns.

Name of Dangerous Weather Pattern and Visuals...	Information of Dangerous Weather Pattern <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
Information of Dangerous Weather Pattern <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	Name of Dangerous Weather Pattern and Visuals...

Use the chart below to answer the following questions.

APPARENT WIND CHILL

	45	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
4mph	45	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40
5mph	43	37	32	27	22	16	11	6	0	-5	-10	-15	-21	-26	-31	-36	-42	-47
10mph	34	28	22	16	10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58	-64	-71
15mph	29	23	16	9	2	-5	-11	-18	-25	-31	-38	-45	-51	-58	-65	-72	-78	-85
20mph	26	19	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-88	-95
25mph	23	16	8	1	-7	-15	-22	-29	-36	-44	-51	-59	-66	-74	-81	-88	-96	-103
30mph	21	13	6	-2	-10	-18	-25	-33	-41	-49	-56	-64	-71	-79	-86	-93	-101	-109
35mph	20	12	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	-105	-113
40mph	19	11	3	-5	-13	-21	-29	-37	-45	-53	-60	-69	-76	-84	-92	-100	-107	-115
45mph	18	10	2	-6	-14	-22	-30	-38	-45	-54	-62	-70	-78	-85	-93	-102	-109	-117

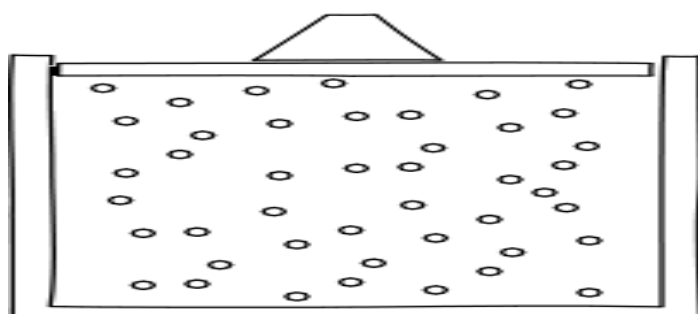
Unpleasant

Frostbite likely.
Outdoor activity
dangerous.

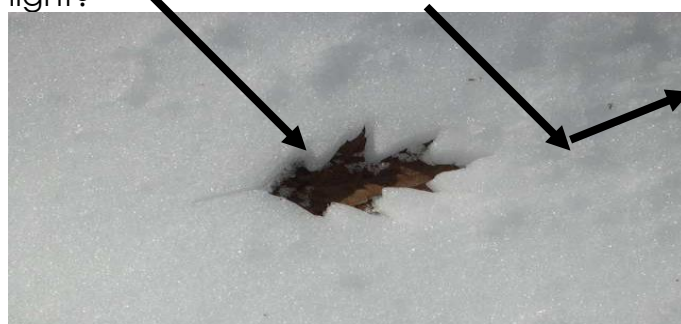
Exposed flesh will freeze
within half a minute for
the average person.

What is wind chill and why should you be concerned about it? How fast will wind chill occur if its -15 degrees F° and the winds are moving at 25 mph?

What is temperature?

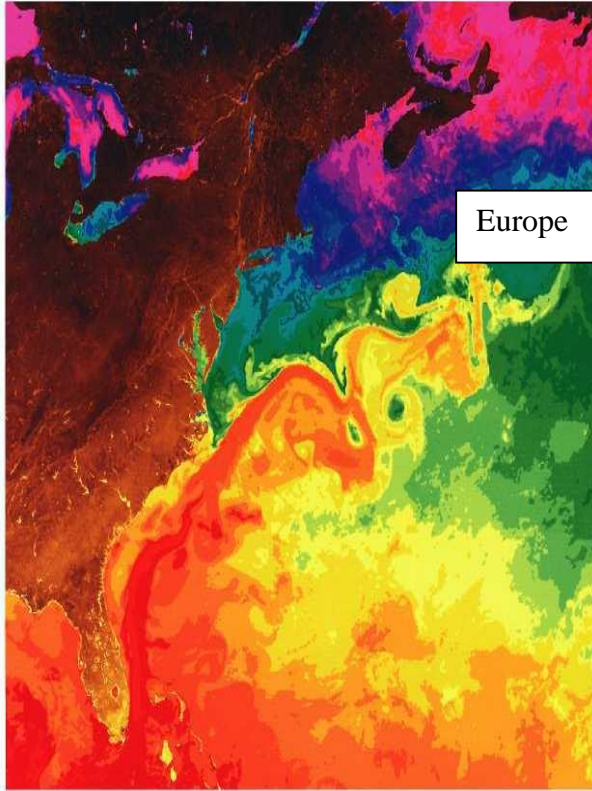


What reflects light below, and what absorbs light?

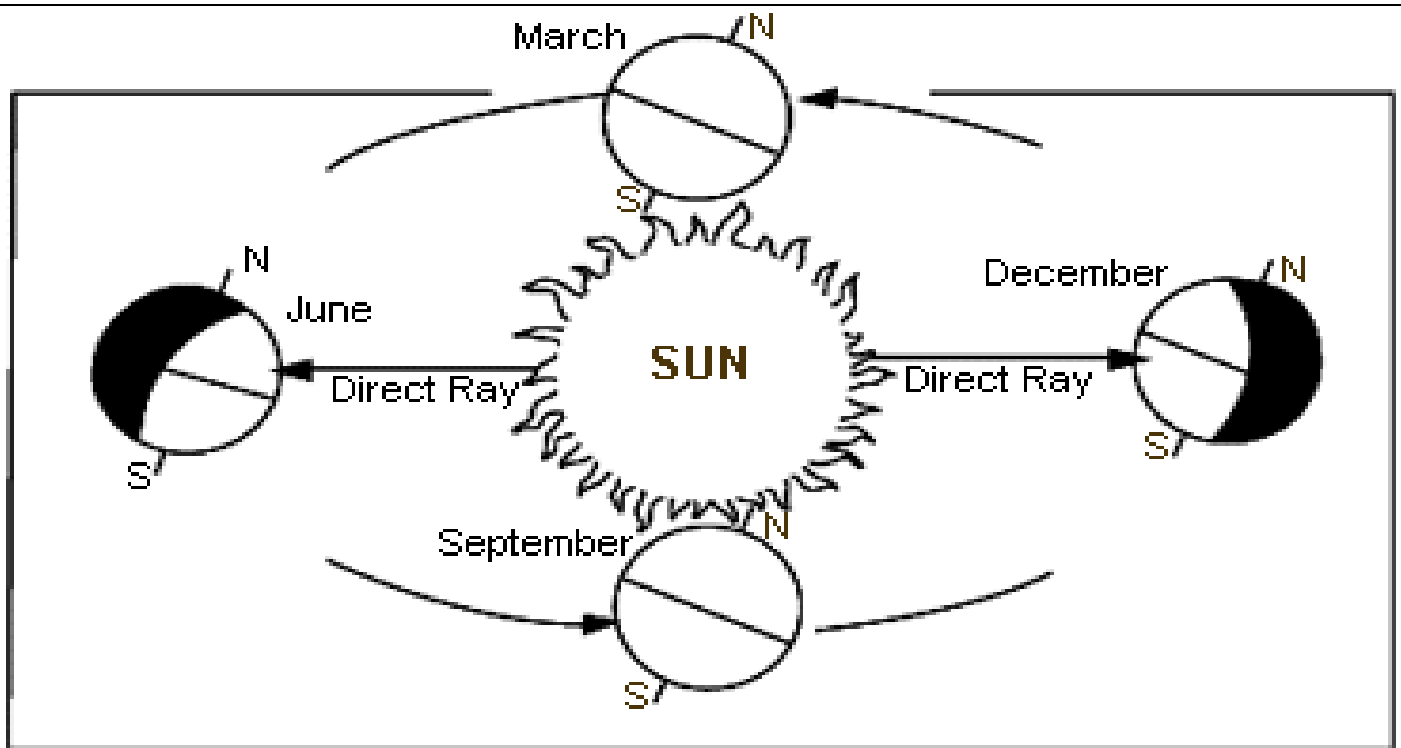


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Look at the Gulf Stream Below. Why is does Europe have such mild winters. Use the photo below as help.



Please view the following picture and describe why the earth has seasons.



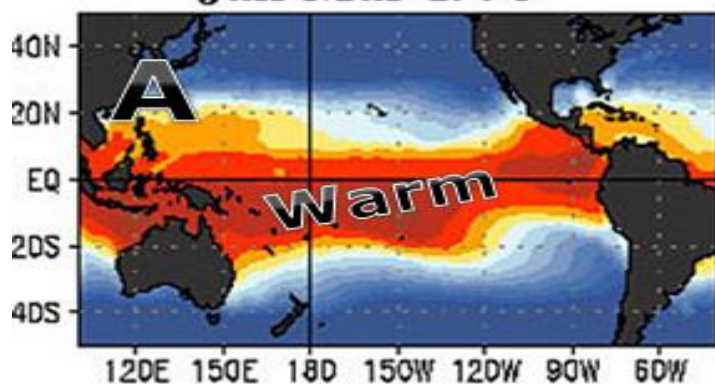
Please respond intelligently to the comment from the angry student below.



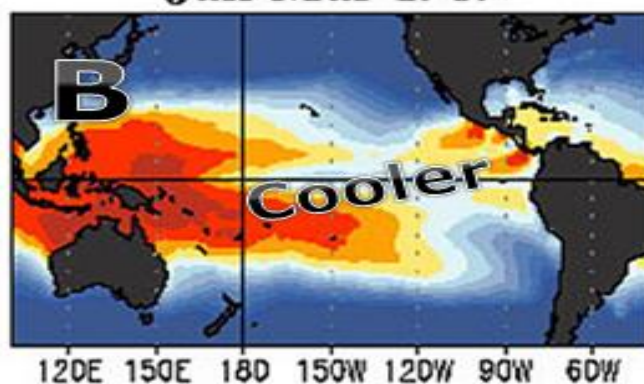
"Studying the ocean in a weather unit is such a waste of time." "The ocean doesn't play a role in the Earth's weather at all." "Save it for Marine Biology." "C'mon".

Which is El Niño and which is La Niña? Explain.

Jan-Mar 1998

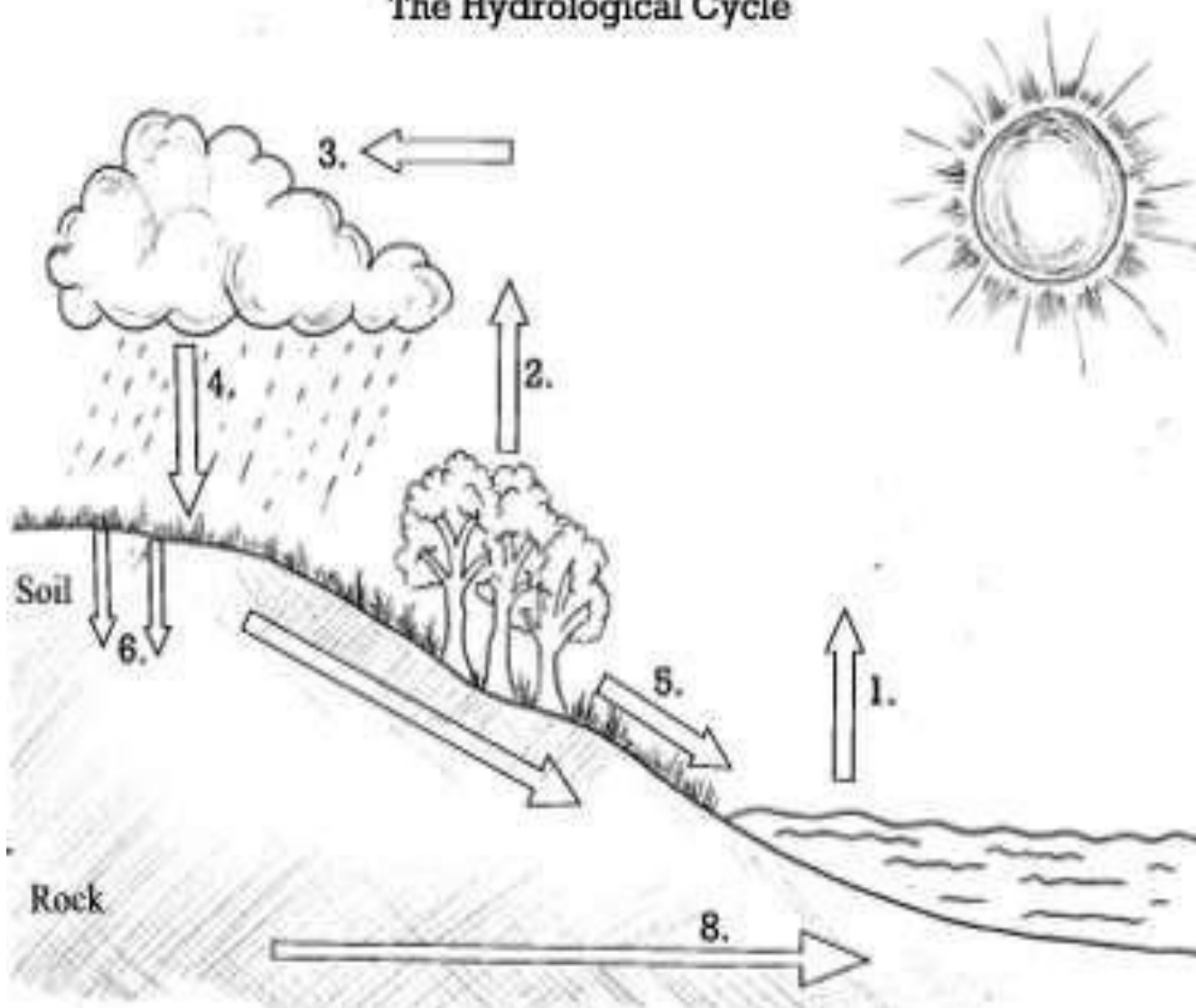


Jan-Mar 1989



Please label 1-8 in the picture below. Some of the terms from the previous word-bank will help you.

The Hydrological Cycle



How do clouds form? _____

Please label the types of clouds in the boxes below.



(h)

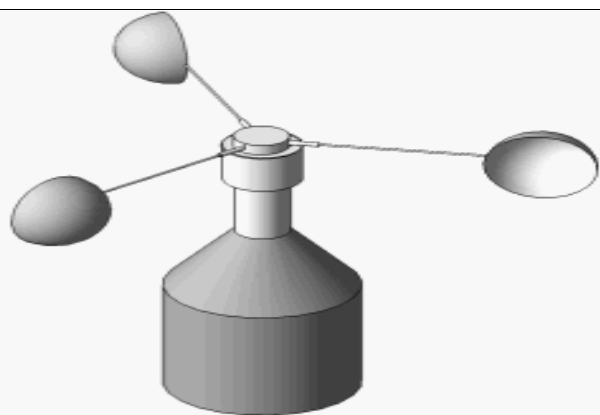
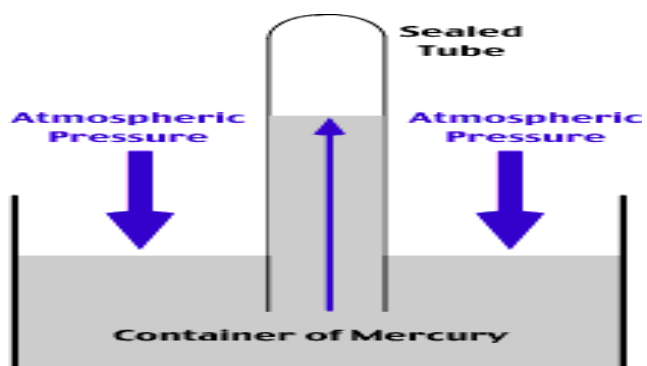
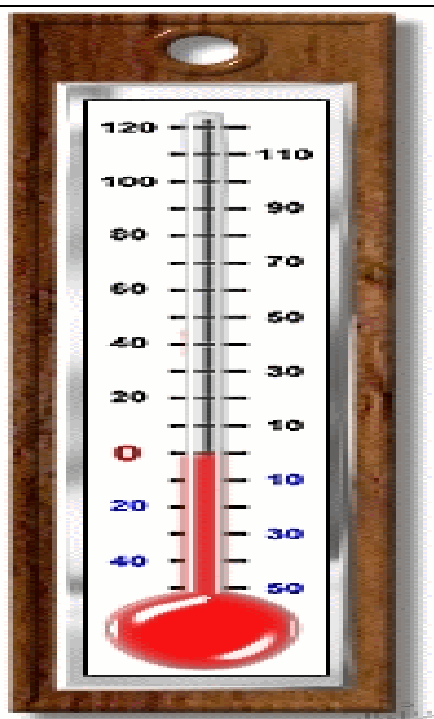


(b)

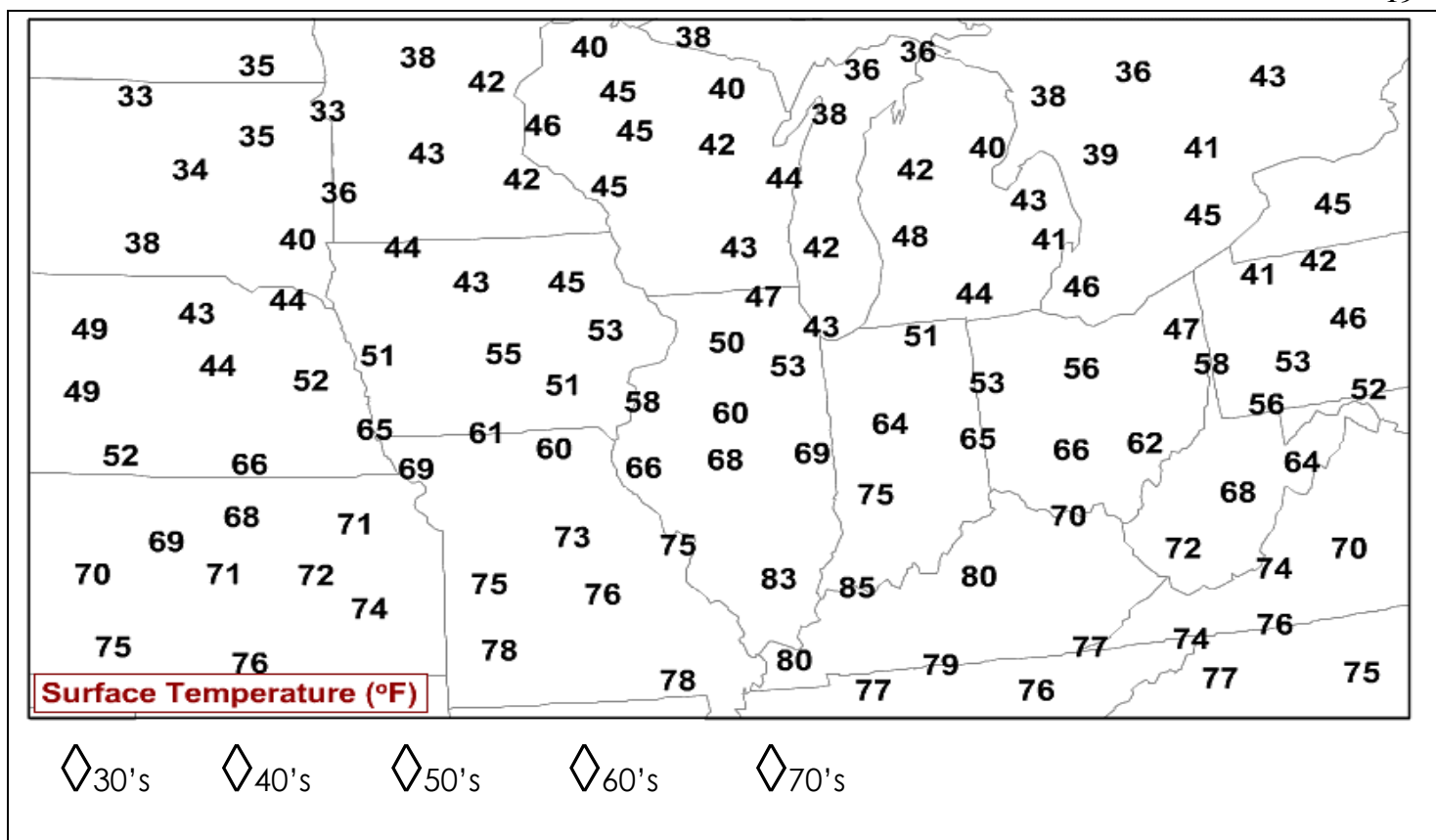


* Warning! Multi-part Question - Name these four common weather tools. What do they record and how do they do it?





Please create and isotherm in the map below. Please color code a key at the bottom of the page.



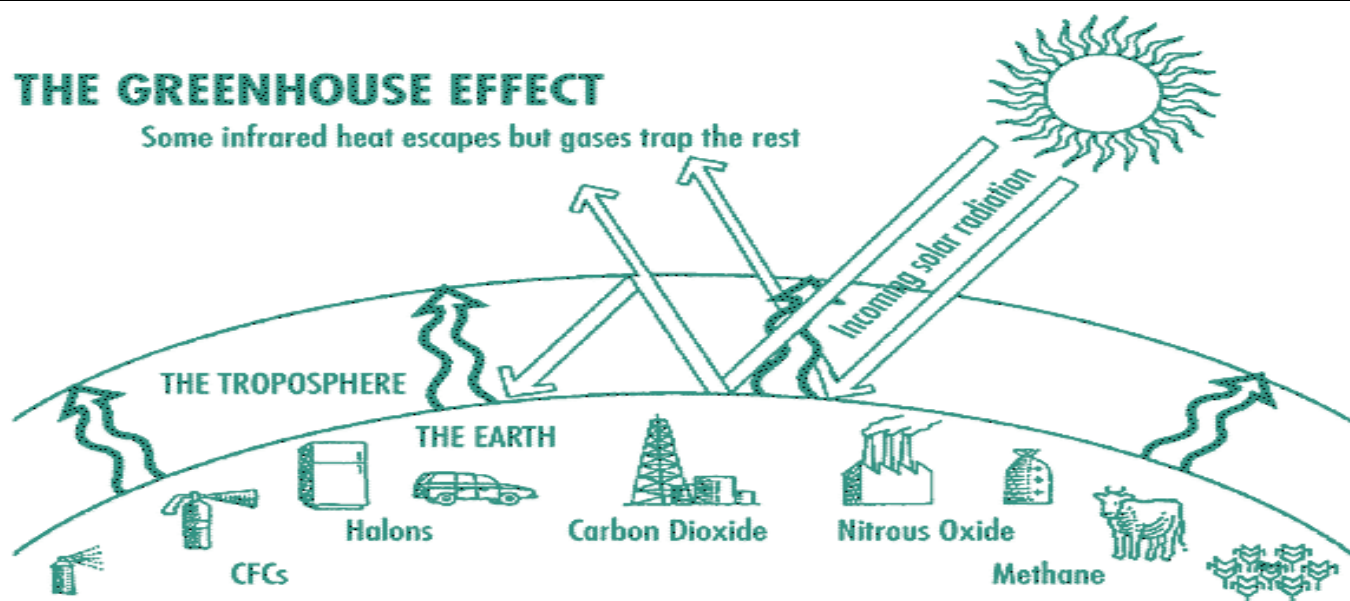
What is human created global warming? _____

What natural factors contribute to global climate? _____

Please use the image below to describe how the greenhouse effect works. Is the greenhouse effect a good thing? Explain.

THE GREENHOUSE EFFECT

Some infrared heat escapes but gases trap the rest



There's a natural carbon dioxide cycle that has been occurring on our planet for millions of years. In the picture below, show how extra carbon, that hasn't been in the carbon cycle for the last several million years is getting in.



Please respond to the person below? I would include a reference to what scientists have found in data and something about the problems that this serious environmental problem may cause.

[illegible]

Use the map below to describe the correlation between Earth's biomes and latitude.



Color code this key to the corresponding biome



Complete during Skit - Pick a biome and tell me about it? Focus on rainfall, temperature, plants, and animals.
Visuals?

Complete during Skit - Pick a biome and tell me about it? Focus on rainfall, temperature, plants, and animals.
Visuals?

Complete during Skit - Pick a biome and tell me about it? Focus on rainfall, temperature, plants, and animals.
Visuals?

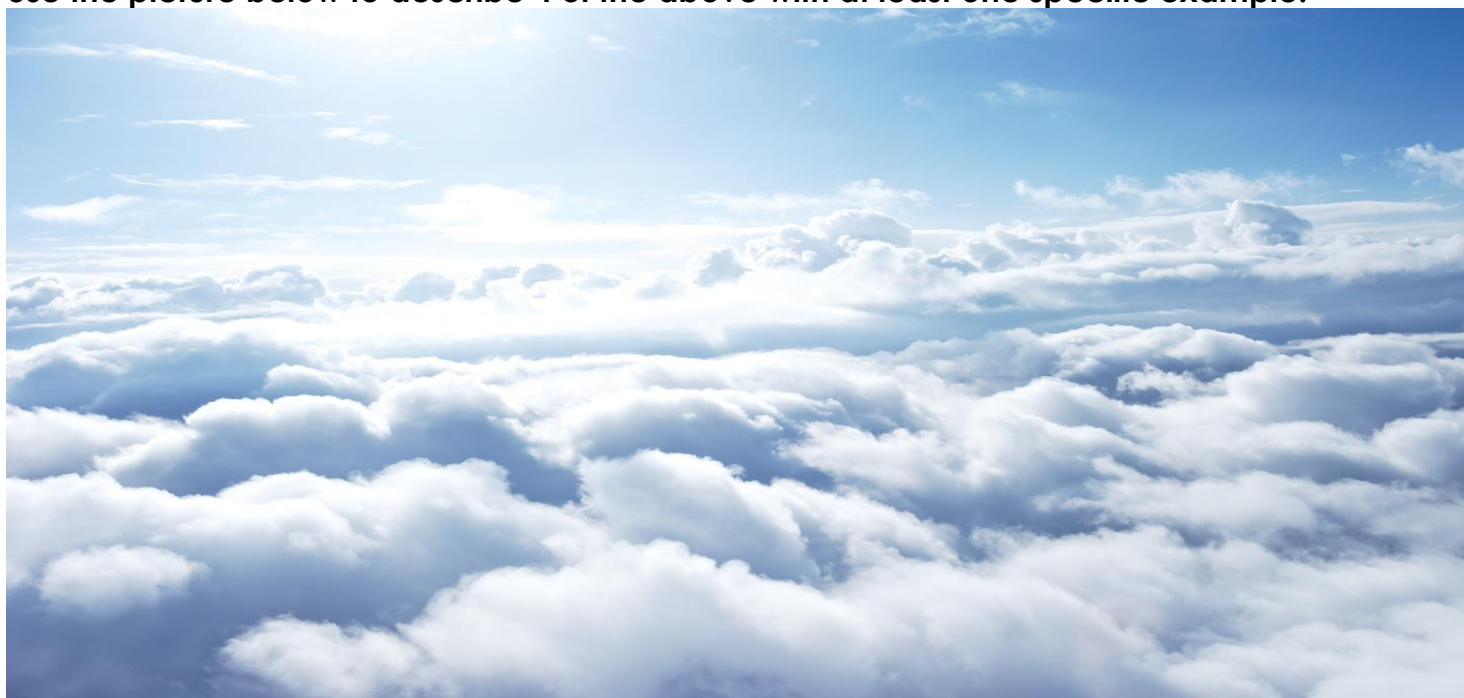
Complete during Skit - Pick a biome and tell me about it? Focus on rainfall, temperature, plants, and animals.
Visuals?

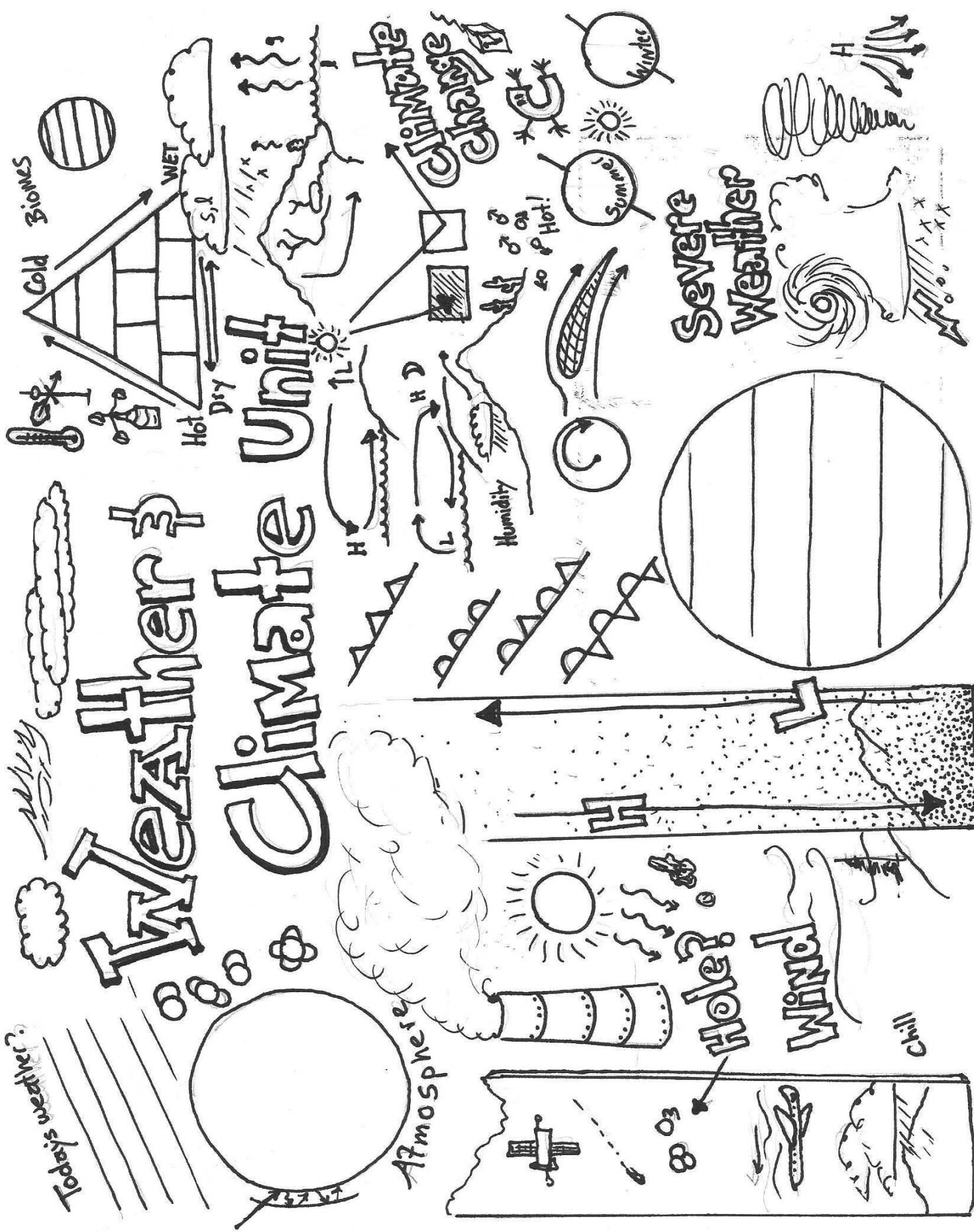
Please provide at least a 25 word weather forecast for today? You must include the big four variables in your forecast? Date: _____

Weather and Climate...

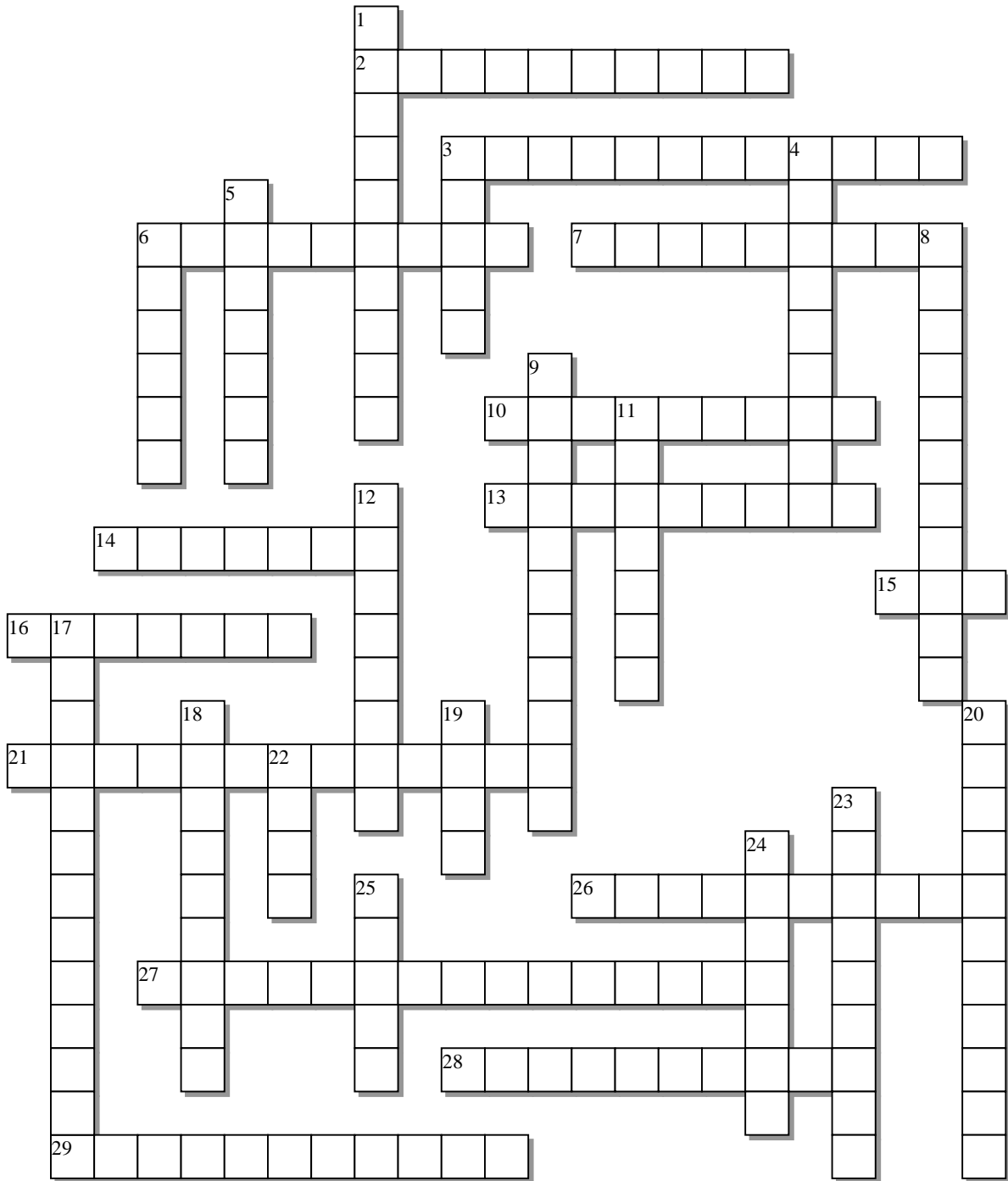
Driven by the _____
 Sustains _____
 Circulates _____ and _____
 Changes _____
 And understanding it holds the key _____
 Hot air _____ (_____)
 Cool air _____ (_____) wind is _____
 The atmosphere is very _____
 The earth is a water _____
 Biomes, determined by _____ and _____
 _____ by humans

Use the picture below to describe 4 of the above with at least one specific example.





Name: _____

Weather Topics Crossword

Across:

- 2 - A weather tool that measures wind speed
 3 - Layer of the atmosphere where jets fly through and contains ozone layer
 6 - Form where cold air moves towards warm air. Creates rain storms.
 7 - Form where warm air moves towards cold air.
 10 - Any of the high-speed, high-altitude air currents that circle the Earth in a westerly direction.
 13 - As elevation increases, air pressure _____
 14 - Name for a puffy type of cloud.
 15 - Moisture condensed from the atmosphere, esp. at night, and deposited in the form of small drops upon any cool surface.
 16 - A violent, dangerous, rotating column of air that is in contact with both the surface of the earth
 21 - The gradual warming of the Earth caused by the greenhouse effect.
 26 - This absorbs 99% of sun's harmful UVB rays
 27 - When cold and warm cannot overtake each other.
 28 - The layer of gases surrounding Earth; composed mainly of nitrogen and oxygen.
 29 - A weather tool that measures the heat from expanding and contracting liquids or coils.

Down:

- 1 - The breeze that blows from the land toward the sea.
 3 - Warm air rises, cool air _____.
 4 - Storm system characterized by a large low-pressure center and numerous thunderstorms that produce strong winds and heavy rain
 5 - The average weather of a particular part of the world at different times of the year.
 6 - Name for a wispy cloud
 8 - Weather occurs in this layer of the atmosphere.
 9 - The study of atmosphere that focuses on weather process and forecasting.
 11 - Name for a layered cloud
 12 - A line drawn on a weather map or chart linking all points of equal or constant temperature
 17 - When a cold overtakes a warm and forces it up (Mix)
 18 - Instrument that measures air pressure.
 19 - Air Pressure drives the _____ and creates the weather
 20 - This is the pressure caused by the weight of the atmosphere
 22 - The movement of air, from high pressure to low pressure.
 23 - The breeze that blows from the sea toward the land during the day,
 24 - The state of the atmosphere at a given time and place.
 25 - A visible body of very fine water droplets or ice particles suspended in the atmosphere at different altitudes.

Possible Answers:

Airpressure, anemometer, Atmosphere, Barometer, Cirrus, Climate, Cloud, ColdFront, Cumulus, Decreases, Dew, GlobalWarming, Hurricane, Isotherm, JetStream, LandBreeze, Meteorology, OccludedFront, Ozone layer, SeaBreeze, Sinks, StationaryFront, Stratosphere, Stratus, Thermometer, Tornado, Troposphere, WarmFront, Weather, Wind, Wind